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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,586	01/26/2001	Kenji Nakao	OGOH:063	1645

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02/03/2004

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EXAMINER

PIZIALI, JEFFREY J

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 02/03/2004

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/744,586

Applicant(s)

NAKAO ET AL.

Examiner

Jeff Piziali

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-34, 36, 38-41 and 43-152 is/are pending in the application.
- 4a) Of the above claim(s) 5-7, 13-28, 30, 32-34, 36, 38-41, and 43-152 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-12, 29 and 31 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicants' claim for foreign priority based on an application filed in Japan on 27 July 1999. It is noted, however, that applicant has not filed a certified copy of the 11/212,718 application as required by 35 U.S.C. 119(b).

Although the applicants insist (see the Restriction Response filed 14 January 2004 -- Paper No. 7) a certified copy of this document has indeed been provided; no copy is presently located on file for the examiner's inspection. A newly submitted certified copy of the 11/212,718 application would be much appreciated.

Drawings

2. The drawings were received on 14 January 2004. These drawings are acceptable.

Election/Restrictions

3. Applicants' election of Species I (i.e. Claims 5-32) and Invention Group 3 (i.e. Claims 8-12, 29, and 31) in Paper No. 7 (filed 14 January 2004) is acknowledged. Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

4. Claims 5-7, 13-28, 30, 32-34, 36, 38-41, and 43-152 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being

Art Unit: 2673

no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7 (filed 14 January 2004).

5. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

6. The listing of references in the specification (see, for instance, pages 1-6) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2673

8. Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. The term "approximately zero" in claim 29 (see line 8) is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It would remain unclear to one skilled in the art precisely how low luminance must drop before constituting an "approximately zero" level.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 8-12, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmae et al. (US 5,610, 735) in view of Sadovnik et al. (US 5,764,317).

Regarding claim 8, Ohmae discloses a reflective liquid crystal display element comprising: a pair of substrates [Fig. 2; 21 & 22]; a polymer-dispersed liquid crystal layer [Fig. 2; 23], in which liquid crystal drops are dispersed in a polymer, the polymer-dispersed liquid crystal layer being arranged between the pair of substrates; and a reflective layer [Fig. 2; 26] formed on one substrate of the pair of substrates; wherein display is carried out by applying an

Art Unit: 2673

electric field across the polymer-dispersed liquid crystal layer to change a light-scattering state of the polymer-dispersed liquid crystal layer (see Column 9, Line 55 - Column 10, Line 7).

Ohmae does not expressly disclose satisfying the relation $50\exp(-0.4d) < SG < 360\exp(-0.47d)$, wherein d is a thickness of the polymer-dispersed liquid crystal layer and SG is a scattering gain of the polymer-dispersed liquid crystal layer. Ohmae does teach a scattering gain of 25, but only mentions a 20 micron thick liquid crystal layer (see Column 11, Lines 1-30) -- which is too thick to satisfy the above relation. However, Sadovnik discloses using a 4 micron thick liquid crystal layer (see Column 12, Lines 1-6). Ohmae and Sadovnik come from the shared field of polymer-dispersed liquid crystal displays. Therefore, it would have been obvious to one skilled in the art at the time of invention to use Sadovnik's 4 micron cell gap within Ohmae's reflective liquid crystal display element, so as to provide the cell gap minimum of the Goosh-Terry Curve (see Sadovnik: Column 12, Lines 1-6). Moreover, doing so, would satisfy the above " $50\exp(-0.4d) < SG < 360\exp(-0.47d)$ " relation.

Regarding claim 9, Ohmae discloses the scattering gain is the scattering gain for transmitted light when the polymer-dispersed liquid crystal layer is formed in a transmissive panel (see Fig. 3; Column 11, Lines 1-30).

Regarding claim 10, Sadovnik discloses the thickness d of the polymer-dispersed liquid crystal layer is at least $3\mu\text{m}$ and at most $8\mu\text{m}$ (see Column 12, Lines 1-6).

Regarding claim 11, Ohmae discloses the scattering gain of the liquid crystal layer is at least 10 and at most 200 (see Fig. 3; Column 11, Lines 1-30).

Regarding claim 12, Ohmae discloses the scattering gain of the liquid crystal layer is at least 10 and at most 200 within a usage temperature range of the liquid crystal display device (see Fig. 3; Column 2, Lines 29-38 and Column 11, Lines 1-30).

Regarding claim 29, Ohmae discloses when viewed from a predetermined viewing direction, there is a luminance peak in the luminance-voltage characteristics as the liquid crystal is changed from the scattering state to the transmitting state; and wherein a range between a voltage at the luminance peak in the voltage-luminance characteristics and a voltage at which the luminance becomes approximately zero is taken as a driving voltage range (see Column 11, Lines 1-65).

Regarding claim 31, Ohmae discloses the viewing direction is set to a direction that is different from an emission direction, in which light is emitted frontwards from the liquid crystal layer when the liquid crystal layer is in the transmitting state (see Fig. 3; Column 11, Lines 1-30).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Yamazaki et al. (US 5,539,548), Miura et al. (US 5,563,432), Nakao et al. (US

Art Unit: 2673

5,796,453), Nakao et al. (US 6,088,075), and Kubota et al. (JP 2001-051260) are cited to further evidence the state of the art pertaining to reflective liquid crystal display elements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (703) 305-8382. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



J.P.

27 January 2004



BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
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